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The Quantum Bubble

How two key experiments invalidate quantum mechanics, and a new theory is ushering in the next paradigm of thought.

Brett Holverstott Follow
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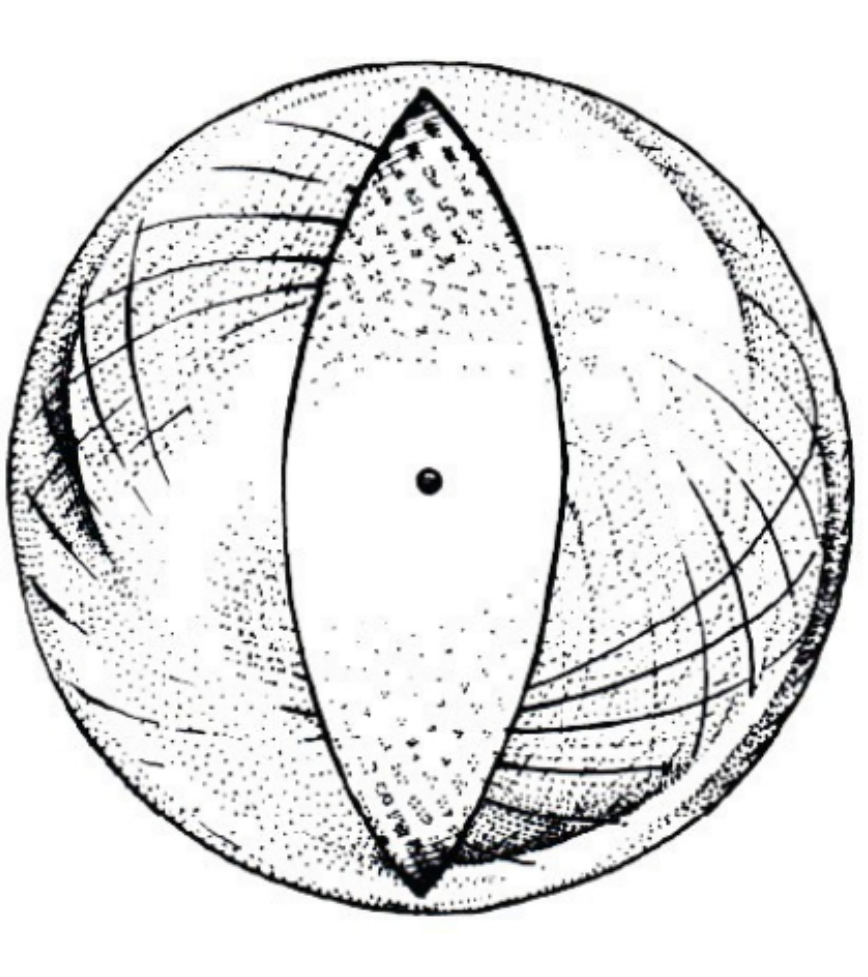

In a recent New York Times piece, Dr. Sean Carroll raises the issue that physicists don't understand quantum mechanics, and aren't particularly interested in the foundations of quantum theory.

> *students who demonstrate an interest in the topic are gently but firmly — maybe not so gently — steered away, sometimes with an admonishment to "Shut up and calculate!"*

This was true to my experience studying physics in college. I felt a pressing need to understand what I was doing, but the professor had a script that closely followed the prevailing view.

The older professors who were interested in the foundations of theory were… frankly, *in love* with quantum, in a unhealthy way. Carroll calls for physicists to again take up the challenge of understanding quantum mechanics. But for this to be more than just lovingly doting over an old idea, we need to be willing to throw it out for something better.

I'm not sure quantum theoreticians are ready for that.

Carroll laments that our ability to move forward has been "stymied by a paucity of surprising experimental results," but I wonder if he has been living under a rock for the last thirty years. Data that invalidates quantum mechanics, and reveals its failure as a predictive model, is flooding in. We look out into the universe and see mysteries everywhere — dark energy, dark matter, the neutrino imbalance in the sun. These mysteries are the trade deficit experiment holds with theory.

Here, I will introduce two experiments — not in space, but on a bench top — that clearly invalidate the quantum model in favor of an *alternative* theory.

Whether physicists like Carroll engage will be a test of their resolve to drive forward the science of our time.

Hang on to your butts.

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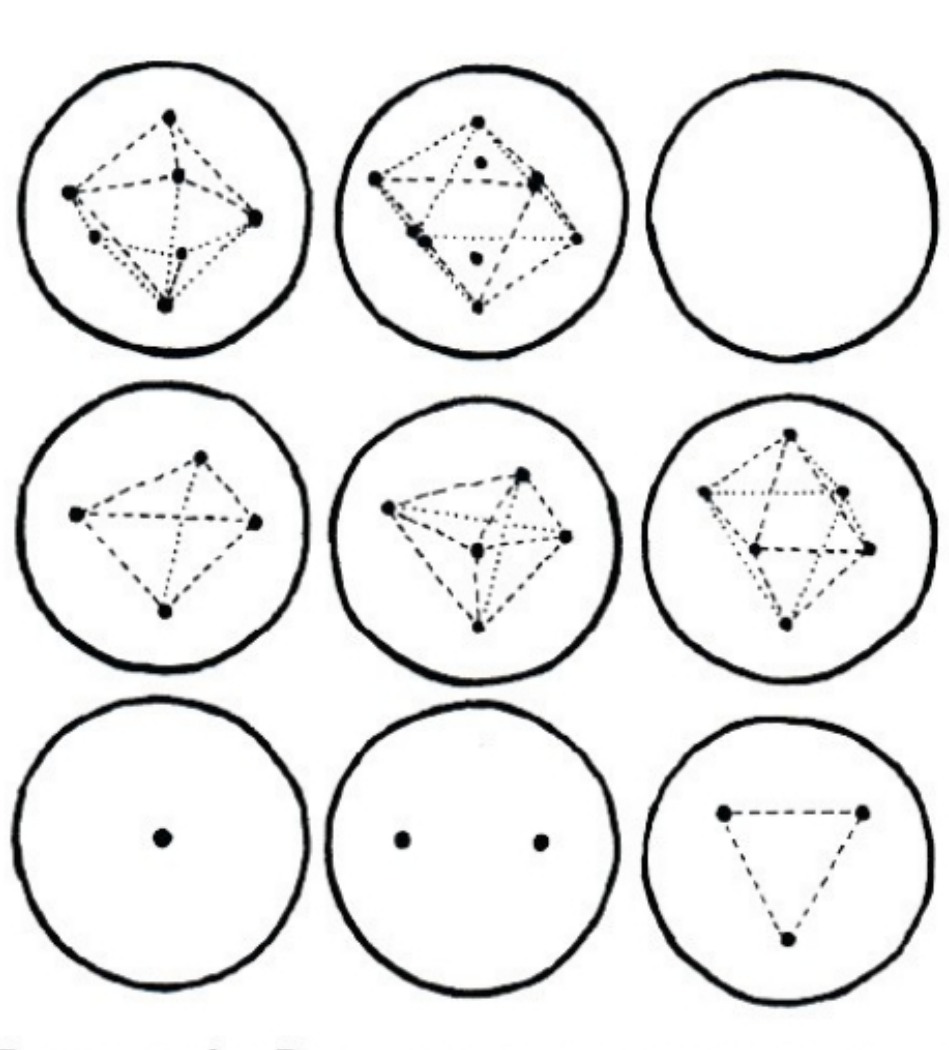
The Model Builders

Prior to the discovery of the electron, theoreticians and philosophers speculated on nature of the atom.

Vortex theory imagined atoms as vortical modes of motion in an ether fluid that filled space. Others imagined pulsating spheres, or fountains of flowing ether (the unfortunately named "ether squirts"). With little experimental evidence to offer, atomic theory was perhaps not conversation for polite company in the world of science.

But in 1887, J.J. Thomson was able to isolate cathode rays, faint trails of illuminated ionized gas that could be bent in a magnetic field, indicating the existence of a particle with a fixed ratio between charge and mass. He adapted a term from previous theoreticians and called it the *electron*.

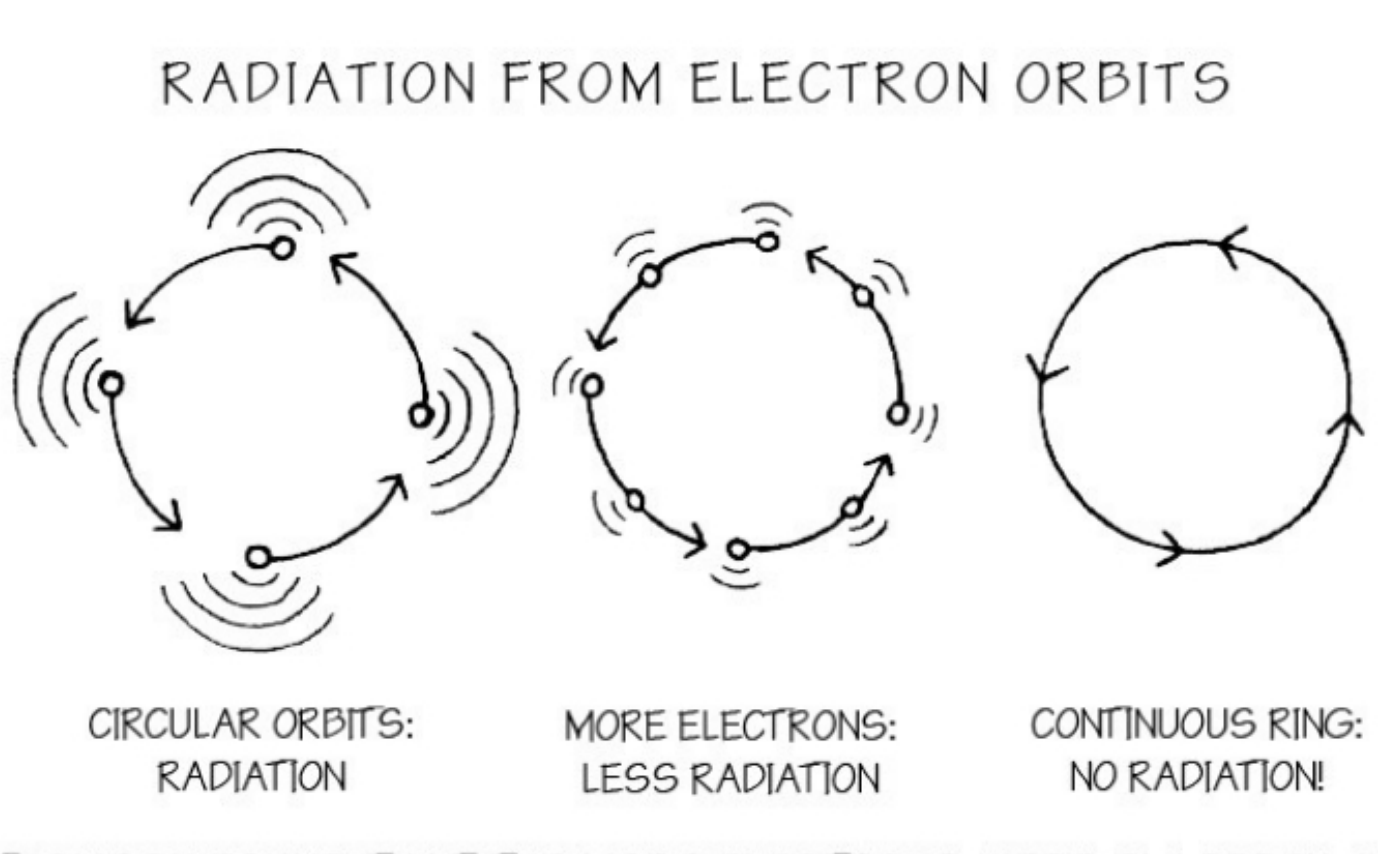
Atoms were neutral, so they needed both electrons and a positively-charged something. Thomson's atomic model proposed something akin to a spherical ball of positively-charged fluid, in which electrons, small point-particles, stood at rest or rotated in circular paths within a plane. He postulated various arrangements of electrons that formed three-dimensional configurations around the center of the atom.



THOMPSON'S THREE-DIMENSIONAL ARRANGEMENTS OF ELECTRONS IN THE ATOM

Thomson found that when the point-like electrons were confined to a disk, a series of nested rings naturally formed. However, according to the laws of electricity and magnetism, electrons moving in a circular orbit would need to shed energy. This is called *radiation*, energy released as light. This radiation drain would force the electrons to slow down, and eventually, stop.

Thomson found that the *more* electrons that were placed in each ring, the *less* radiation was emitted overall. If electrons were packed into an orbit to form a *continuous* ring of charge, the radiation drain would theoretically drop completely to zero, allowing rings of electron current to orbit forever. This was profound, although a simplistic model.



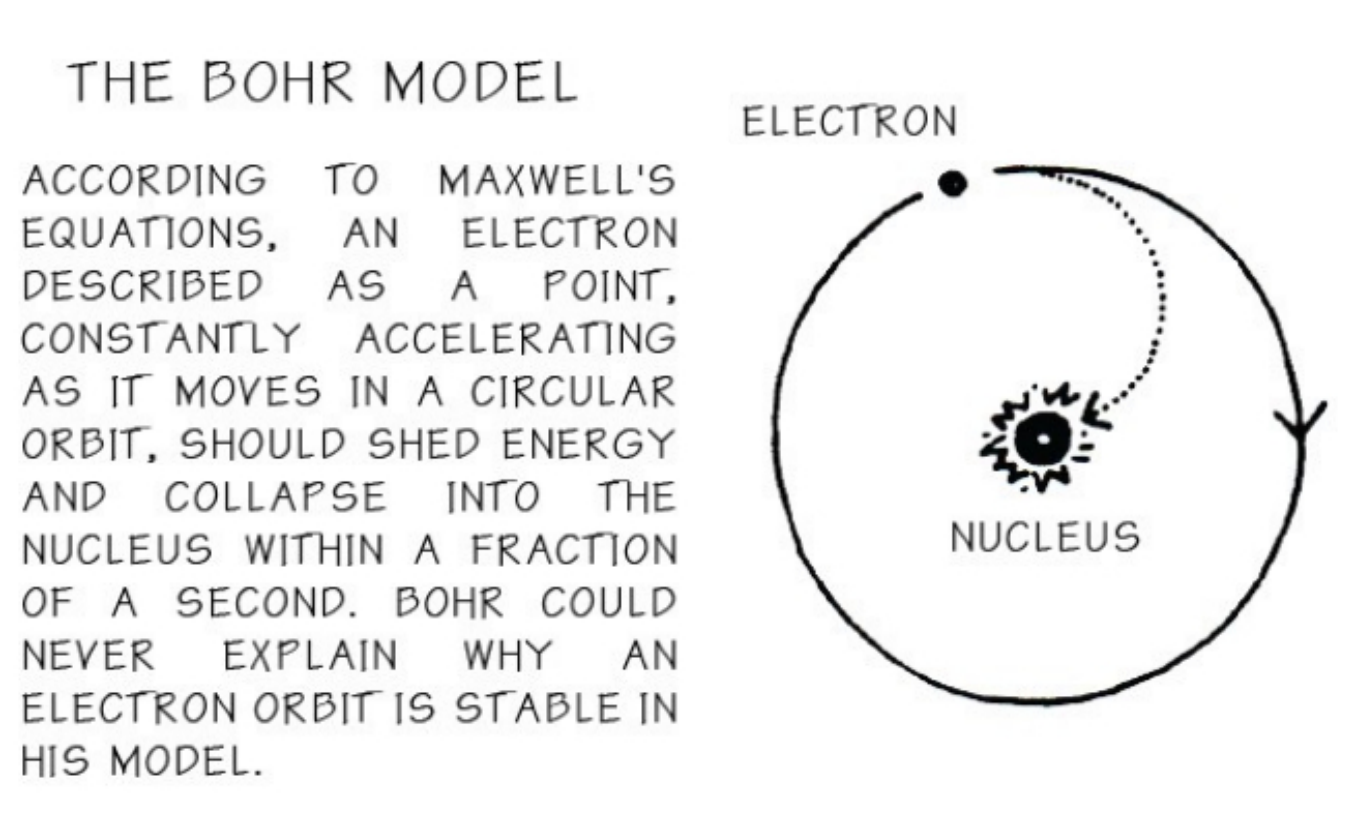
RADIATION FROM ELECTRON ORBITS
CIRCULAR ORBITS: RADIATION
MORE ELECTRONS: LESS RADIATION
CONTINUOUS RING: NO RADIATION!

THOMSON FOUND THAT THE MORE ELECTRONS WERE PLACED IN AN ORBIT, THE LESS RADIATION IS EMITTED OVERALL.

From 1900–1910, British model builders tried to imagine what was happening in the atom. Kelvin's Aepinus atom; Oliver Lodge's concept of interlocked positive and negative electricity; Philip Leonard's neutral dynamids, doublets of positive and negative electrons; James Jean's concentric shells of alternating charges. Inspired by Thompson's ringlike electrons, Hantaro Nagaoka speculated that rings of electrons orbited like the rings of Saturn, about a ball of positive charge.

It wasn't until Rutherford's team fired particles at a thin foil of gold in 1911 that we learned that atoms had a small, compact nucleus, leading to Bohr's famous model now taught in grade school everywhere, in which electrons orbit the nucleus in circular orbits, much like the planets orbit the sun. The electron is attracted to the charge of the nucleus, but its momentum keeps it from falling in.

But what about the radiation drain? In fact, it didn't go away. The electron, in constant acceleration on a circular path, should radiate, lose energy and spiral into the nucleus within a fraction of a second.



THE BOHR MODEL

ACCORDING TO MAXWELL'S EQUATIONS, AN ELECTRON DESCRIBED AS A POINT, CONSTANTLY ACCELERATING AS IT MOVES IN A CIRCULAR ORBIT, SHOULD SHED ENERGY AND COLLAPSE INTO THE NUCLEUS WITHIN A FRACTION OF A SECOND. BOHR COULD NEVER EXPLAIN WHY AN ELECTRON ORBIT IS STABLE IN HIS MODEL.

Bohr was familiar with Thomson's work and we can imagine him late at night, paging through Thomson's description of the radiation of orbiting charges. When the electron absorbs light, it jumps to a higher orbit, but experiment reveals that all these excited state orbits are unstable, and quickly decay back to the ground state. The ground state however, *is* stable, and Bohr was unable to offer a theoretical justification for this in his model.

In about 1914, work along this vein largely ceased. A generation of physicists were recruited to the war effort or lost on the battlefield.

In an analogy from Phillip Pearle, the atom was like a house under construction but abandoned by the workmen on receiving news of an approaching plague.

The plague, in this analogy, was quantum mechanics.

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A Philosophical Diversion

In 1920, Germany was the premier nation in the world for science. At a gathering in Bad Nauheim, Wolfgag Pauli stood up, and complained:

> *None of the erstwhile theories… has up to now succeeded in solving the problem of the elementary electric quanta in a satisfactory manner; thus it is desirable to look for a deeper reason for this failure*

Since its inception, physicists did not love the Bohr model. The radiation problem was just one of its many problems. Pauli along with Born, Heisenberg, and Jordan were looking for a new approach, and they frequently met to discuss a philosophical principle they called *Mach's Principle*.

Ernst Mach was a counter-Enlightenment philosopher who was opposed to enlightenment notions regarding the objective world, natural laws, the reality of atoms, the reliability of our sense, and Newtonian concepts of absolute space, time, and substance. Pauli was Mach's godson and had extensively read his works. As Born expressed their distillation of Mach:

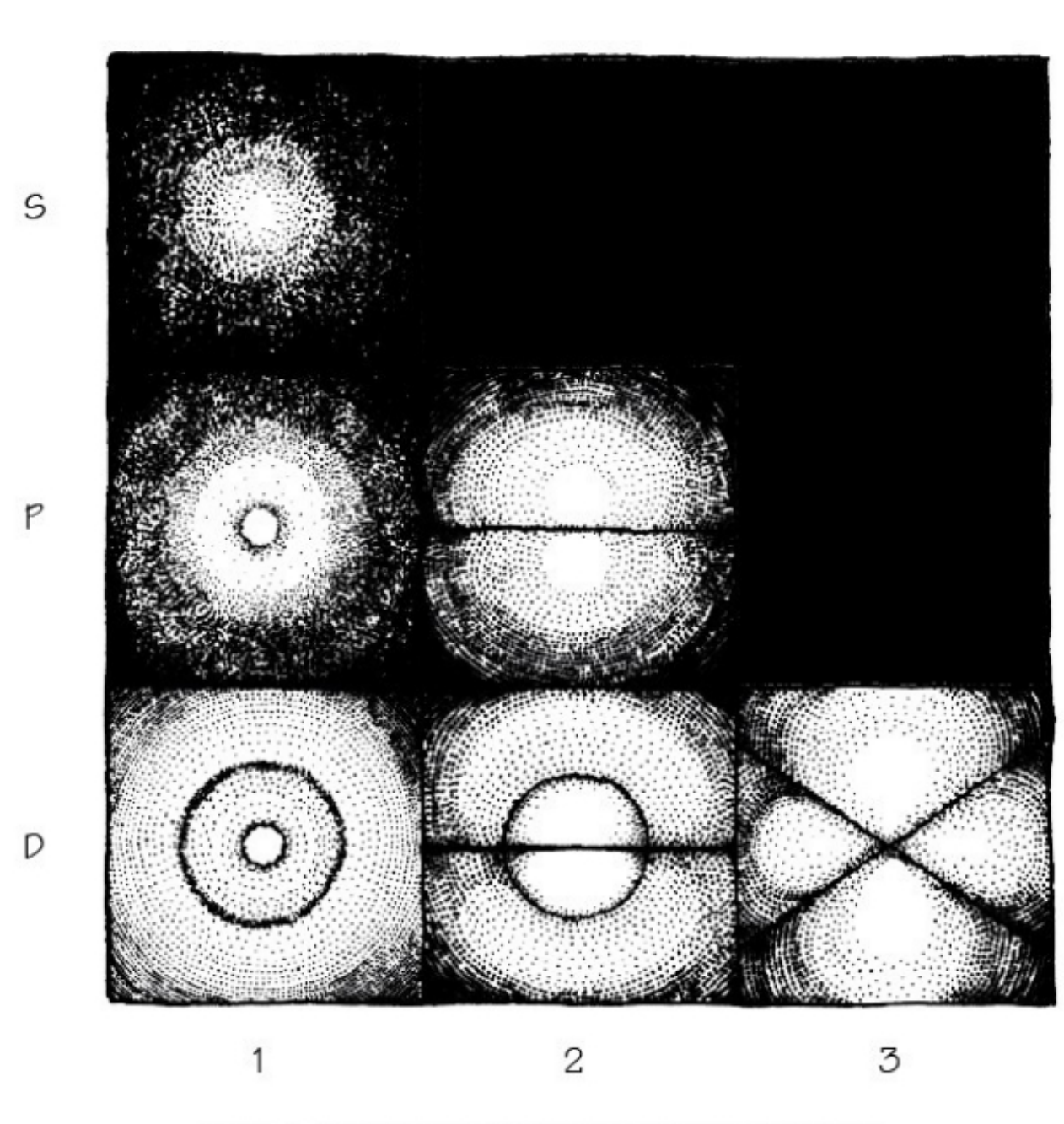
> *"concepts and representations that do not correspond to physically observable facts are not to be used in theoretical description."*

Their goal was to construct a theory in terms of *observables* — things which can be seen and measured. The interior of the atom was not observable. No experiment could give the instantaneous position and velocity of electrons, only the energies of their stationary orbits and the frequencies and intensities of their transitions.

In 1925, Heisenberg did it. He developed a new theory in which numbers that represented physical properties, such as the position and motion of the electron in the atom, were replaced with numbers that could be measured directly from experiment, such as transition amplitudes and frequencies. The scheme reproduced the Rydberg formula giving the excited state energies of the hydrogen atom, but, as intended, it had little or no reference to an underlying physical mechanism.

To say that quantum theory was *entirely* motivated by early twentieth century Mach's positivism is a little unfair. In 1926, Schrodinger derived a mathematically equivalent theory by starting with a physical analogy to the behavior of waves. I don't think it is commonly known that when he applied his wave theory to calculate the energy states of the hydrogen atom, it was totally wrong. Perplexed, he reluctantly tried a different equation, used for modeling heat diffusion. This worked.

Schrodinger originally imagined his model as charge spread out over a spatial volume, what he called the 'mechanical field scalar.' It diffused like heat, outward from the nucleus in all directions. Think fog illuminated by a street lamp.



QUANTUM WAVEFUNCTIONS OF THE HYDROGEN ATOM

SCHRODINGER CONJECTURED A STATIC CLOUD OF ELECTRON DENSITY THAT DIFFUSES OUTWARD FROM THE ATOM, GUIDED BY SPHERICAL HARMONIC FUNCTIONS.

Although his equation later came to be called the *wavefunction*, there was really nothing waving in the atom. Or moving. There was no outward momentum, no spin, nothing to keep the electron cloud from falling into the nucleus; no solution to the radiation drain. It ignored these classical considerations.

The new theory, which was identical to Heisenberg's but benefited from Schrödinger's more intuitive mathematical formalism, became quantum mechanics. Like parents quarreling over how to raise their child, physicists argued over how to use and interpret it.

In 1926, Born suggested that the wavefunction was describing the *probability* of finding an electron within a range of locations, if you were to measure its location in an experiment. This retained the idea of the electron as a classical point, but somehow bound it up within a probability density field resembling Schrodinger's volume charge.

If you think that sounds absurd, remember that Born only wanted an *operational* definition, not a description of nature. The purpose of the theory is to tell you about a number you might obtain from an experiment.

Nevertheless, we have seen almost a century of thought in which physicists try to imagine Born's statistical view as something more, a genuine proposal that the electron is really many places at once. Its almost like, the joke's on them.

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The Model Building Continues

It cannot be underestimated how strong a grip quantum mechanics held on the physics community. Only a trickle of lone voices, spread over the next several decades, still spoke of the unsolved problem of radiation from a classical electron. So unpopular was this topic that authors, in their technical papers, often apologized in print for bringing it up.

So long as the electron was a point, it had to radiate under any form of acceleration. But the electron couldn't radiate in the atom. So, it couldn't be a point. Physicists turned to the next best thing: spherical shells. Shells have an intuitive appeal to physicists. Fritz Zwicky once insulted a colleague thus: "he is a spherical bastard, a bastard any way you look at him."

First explored by Abraham, Lorentz, and Poincare, spherical shell models had a growing repertoire of their own problems. How did they stay together instead of blowing apart from self-repulsion? How could they remain stable?

In 1933, less then a decade after Heisenberg and Schrodinger's work, G.A. Schott published a paper which described a theoretical scenario in which it is possible for an extended charged distribution — again a spherical shell — to accelerate in a circular orbit without radiating energy. If the sphere is spinning and orbiting at the same time, and if the periods of these were set just right, the sphere would never radiate.

He had a proof of concept that classical laws might be able to solve the problems faced by atomic theorists.

Schott continued studying classical models, as did Dirac, who published in 1938. Despite Schott's progress, Dirac continued to insist that quantum mechanics was the only option on the table; propping a myth that has been sustained to this day.

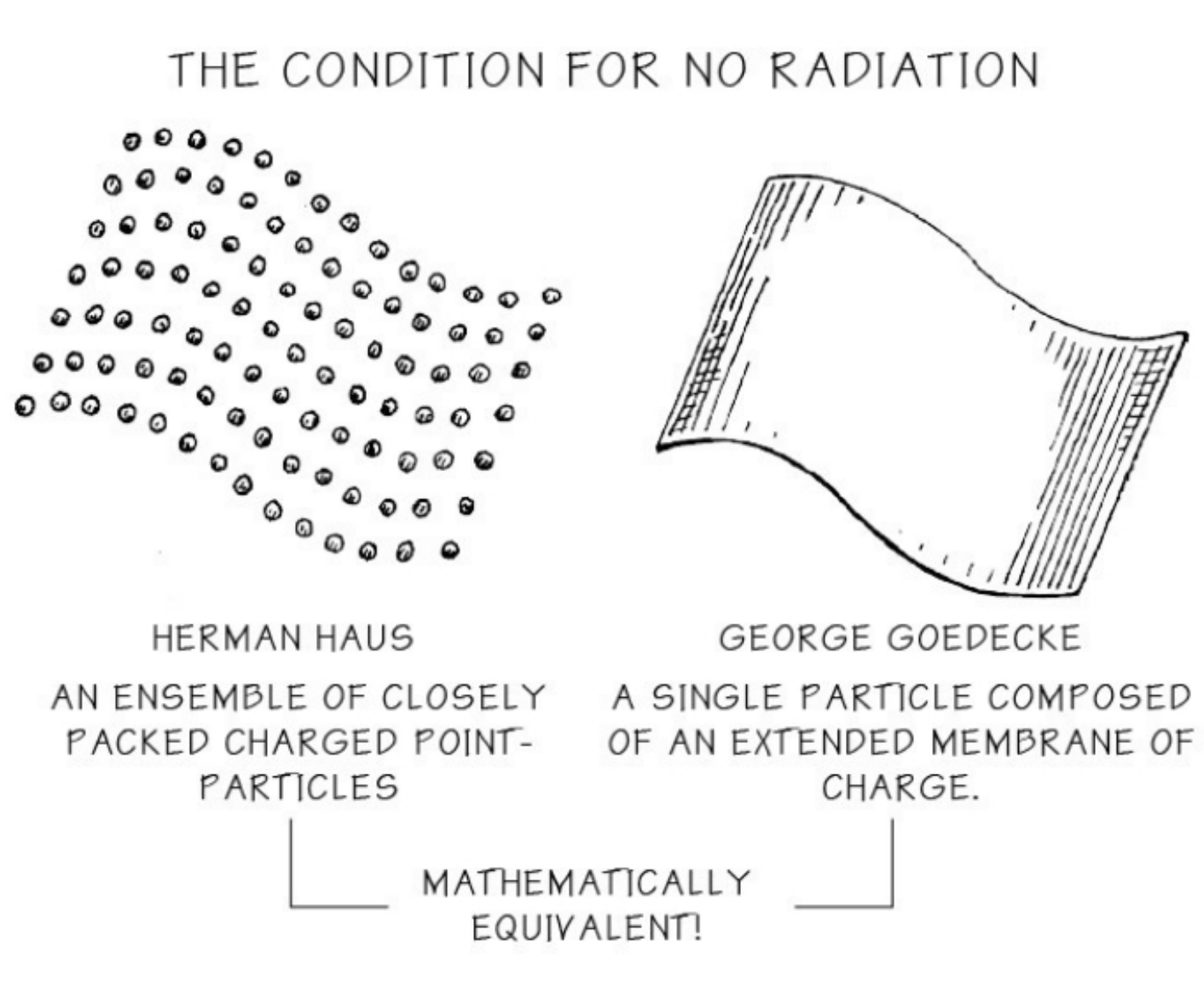
The real breakthrough occurred in 1963, when George Goedecke published a more general description of radiationless motions. He studied various spherical shells and solid spheres, spinning or fixed. He was excited by his preliminary results to speculate on:

> *a 'theory of nature' in which all stable particles (or aggregates) are merely nonradiating charge-current distributions whose mechanical properties are electromagnetic in origin.*

Although Goedecke's research on radiation diffused into the general consciousness of the field, there was very little interest in moving it forward.

In 1986, a professor at MIT, Herman Haus — apparently without knowledge of Goedecke's work — published his own general condition for acceleration without radiation, one that was more physically intuitive. He showed that a current distribution would only radiate if it contained Fourier components that were *lightlike*, synchronous with light speed.

But so had quantum mechanics diverged from classical mechanics that Haus didn't know that he was contributing to quantum theory. He imagined charge distributions as dense collections of points instead of a continuous surface membrane that could describe a fundamental particle.



THE CONDITION FOR NO RADIATION
HERMAN HAUS
AN ENSEMBLE OF CLOSELY PACKED CHARGED POINT-PARTICLES
GEORGE GOEDECKE
A SINGLE PARTICLE COMPOSED OF AN EXTENDED MEMBRANE OF CHARGE.
MATHEMATICALLY EQUIVALENT!

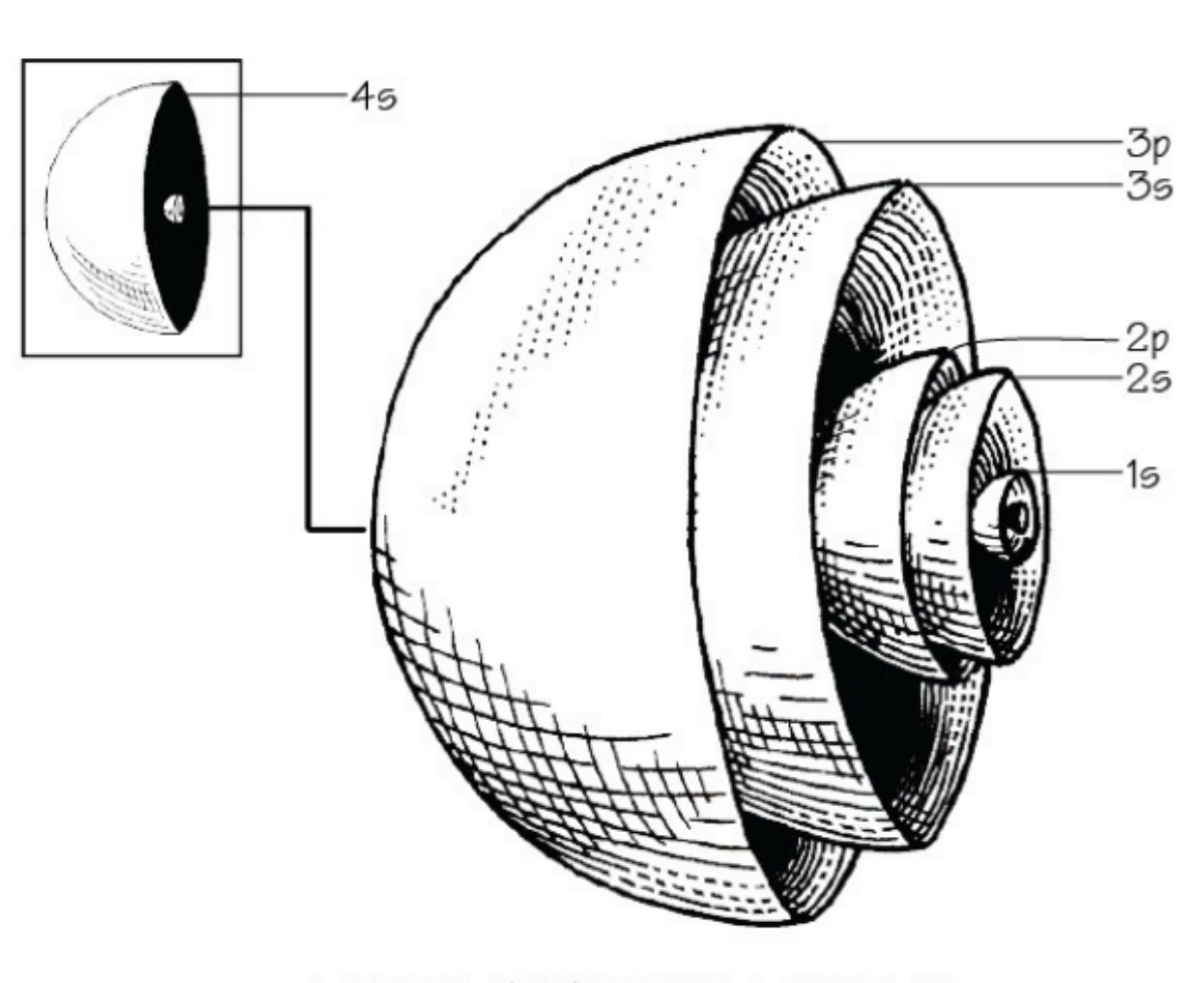
Haus gave a talk about his paper to his graduate class. One of his students voiced an interest, and Haus handed him a copy. The student was Randell Mills.

Mills was something of a polymath who was earning an MD at Harvard, but was more interested in inventing new medical technology. Having completed his medical coursework in only three years, he was using his fourth year for electives at MIT. In the first years out of med school, Mills churned through the math for a new a kind of MRI, invented and tested a complex chemical chain reaction for a new drug delivery compound, and invented and tested a new kind of cancer therapy based on the Mossbauer Effect. The latter earned him a publication in *Nature*.

When these kinds of intellectuals happen, best idea is for the rest of us to just get out of the way.

When Mills read Haus's paper as a student, he imagined that it could provide the foundation for a new theory of nature, in which electrons were classical membranes of charge constrained by the requirement of no radiation. Over the next few years, Mills developed the foundation for a new theory in which the electron was a spherical membrane of moving charge, like a soap bubble, centered on the proton.

While classical electron theorists had always assumed some kind of sphere (oscillating or orbiting, rigid or deformable) would be the answer, they had never considered *centering* an electron shell on the proton before. Although the math was more complicated, the basic physics was very similar to Bohr's model of the atom.



MULTI-ELECTRON ATOMS

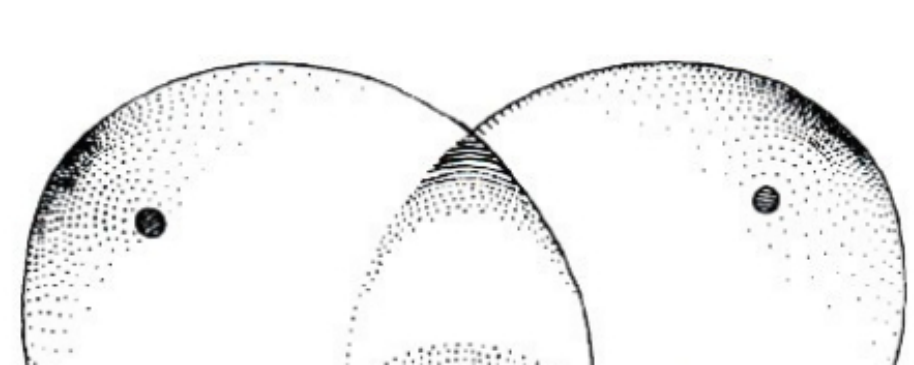
ATOMIC ORBITAL SHELLS (s, p, d, f…)ARE CONCENTRIC ORBITSPHERES EACH HOLDING ONE OR MORE ELECTRONS. THE CHARGE DISTRIBUTION ON s-SHELLS IS UNIFORM, BUT OTHERS REQUIRE MODULATION BY SPHERICAL HARMONIC FUNCTIONS. THE RADII OF EACH SHELL IS CALCULATED FROM FORCE-BALANCE EQUATIONS.

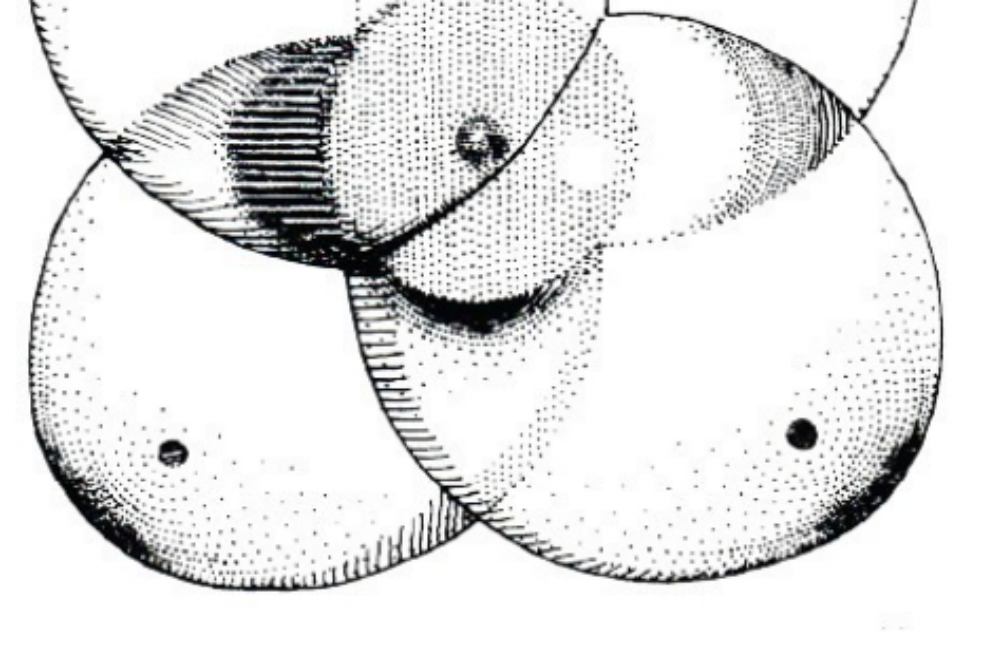
Mills's model matched the well known energy levels of hydrogen. But it did more: it was the first to offer a *physical explanation* for why the ground state orbit was stable to radiation but the excited states were not, using the Goedecke-Haus condition.

In the decade that followed, Mills took his model light years ahead of quantum mechanics in terms of predictive power. He calculated the state lifetimes and line intensities of the hydrogen excited states, thousands of numbers. He calculated the spectrum of helium, thousands of numbers. He calculated the electron energy levels of the first twenty-electron atoms in the periodic table, walking through the atoms one by one, hundreds of numbers that matched to within the error bars of NIST experimental data.

In quantum mechanics, any interaction between two electrons is basically an unsolved problem, and a computational nightmare. But Mills's electron shells reduced the problem to a much simpler force equation. And by incorporating relativistic corrections for the fast-moving inner electron shells, it made the theory's predictions *even more* accurate.

Mills spent another several years rebuilding all of quantum chemistry with his own model, calculating bond energies, lengths, and geometry.





METHANE (CH_4)

Despite this demonstration of predictive value, Mills's theory has been subject to the embargo of alternative theories by mainstream physicists. It is not a conspiracy, just psychology. It is the same with every other moment of revolutionary change; the old guard resists the change, while the young and curious embrace it.

There is much to do. We have learned to think through the quantum sieve about so many experiments in the last eighty years that unraveling the way quantum models wave-particle duality, non-locality, tunneling, and quantum teleportation will not be easy. We are constantly told that our intuitions about nature must be wrong, instead of the other viable alternative — our model for understanding the phenomena is bad. Really bad.

While the ability to calculate known experimental data is one thing, what the scientific community really needs to engage a new paradigm of thought is at least one model experiment that demonstrates the abject failure of the old paradigm.

For good measure, let's discuss *two*.

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How to Pop an Electron Bubble

In the 1930s, the Russian scientist Pyotr Kapitsa discovered that when helium is liquefied and cooled to about 2 degrees above absolute zero, it loses viscosity and becomes a *superfluid*. Analogous to superconductivity, superfluidity means there is no resistance to motion. It is an interesting state of matter that won Kapitsa a Nobel Prize.

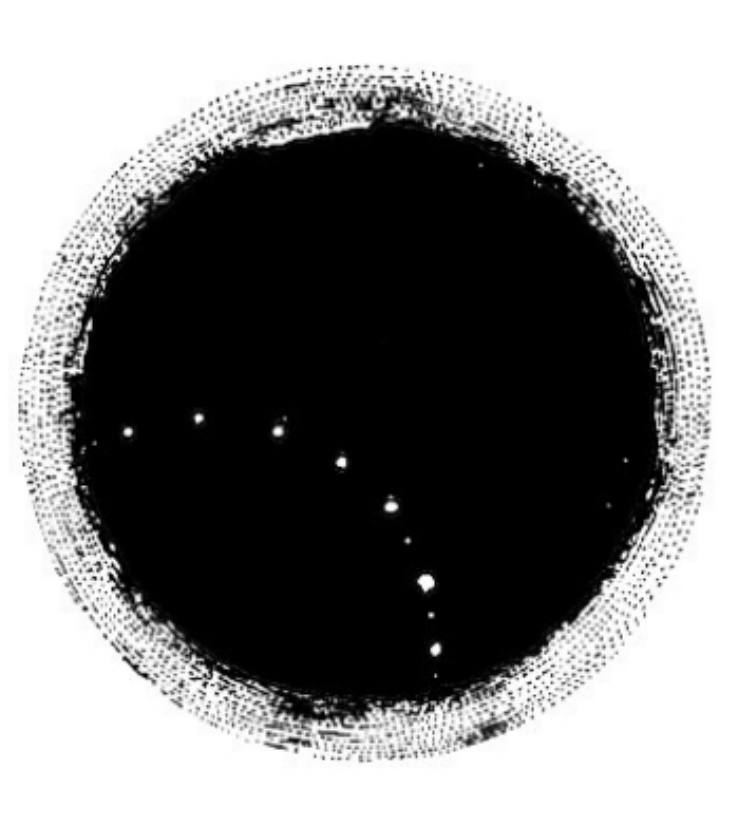
Forty years later, scientists began studying ion mobility in cells containing superfluids. Throw a vapor of potassium atoms into the top of the cell, spray electrons at them, and some of those electrons would bind to the atoms and give it a charge. Apply an electric field, and you will see the ions moving through the fluid. How fast they go tells you how large the atoms are, physically.

In one experiment, the electron source was submerged in the superfluid, and scientists discovered some new charged species moving through the cell that they couldn't identify.

It turns out that electrons trapped in the helium will create a cavity for themselves, an electron *bubble*. At low pressure, this cavity will have a radius of about 19 Å, about forty times the diameter of a hydrogen atom. As pressure in the liquid helium is increased, the radius decreases. They are like atoms without a nucleus.

In a stroke of genius, it occurred to the experimentor to hit these bubbles with sound waves in order to make them 'pop.' And they do, releasing a flash of light, before reforming the bubble. You can in fact repeat this many times a second to track the movement of the electron through the superfluid.

So much for the probability-field idea!



THE PATH OF AN ELECTRON BUBBLE MOVING THROUGH A CELL OF LIQUID HELIUM AT 2.5 K. THE POSITION IS CAPTURED EVERY 31 MILLISECONDS. AFTER THAT IN (MARIS 2008).

In this experiment, you can measure the drag that the electron bubbles experience as they move through the fluid in order to measure their size, and it is a good match for the quantum prediction.

However, from 1969 to 1972, scientists found at least sixteen additional charged species moving through the superfluid at a rate faster than what quantum mechanics predicted for an electron bubble. These species formed only when we would expect electron bubbles to form.

Physicists scratched their heads, and decided that most likely, they were an *excited state* of an electron bubble.

Theoreticians explored this option, but unfortunately, excited state bubbles were predicted by quantum theory to be invariably *larger* than the ground state bubble. So these species should have a higher surface area and be moving more *slowly* through the fluid.

Grasping for another option, Humphrey Maris suggested that under certain conditions, an excited state electron bubble with a double-teardrop shape and a small waist could perhaps be made to split into two pieces, each of which could migrate separately through the fluid. He called these *electrinos*.

I give Maris an "A" for effort there, but physicists have been unable to split electrons by smashing them together at phenomenally high energies. Some theoreticians rationalize it by arguing that the two halves of the electron are still conjoined, even while physically separate, in a quantum entangled state.

To use a second movie line from Samuel L Jackson: now that's some bullshit. Maris was not convinced by his own theory either. In a 2008 review article, he laments:

> *"So far it has not been possible to find any model that can explain the nature of these objects"*

When a journal editor heard about this work, he invited Mills to submit a paper on the topic. He thought that Mills's theory might have another explanation.

Mills did, with an extraordinary paper. Unlike the quantum model, when Mills's electron bubble absorbs light to form an excited state, it *shrinks*. In fact the bubbles form at a series of radii that are 1/2, 1/3, 1/4… etc, the radius of the ground state bubble.

Although similar to atomic excited states, the physics of electron bubbles is somewhat different. In the hydrogen atom, when an electron captures light as a photon, the photon shields the electric field of the nucleus, allowing the electron shell to expand. Whereas, when an electron bubble captures light as a photon, the photon shields the negative electric field of the electron itself, allowing it to shrink. This shrinkage comes with an increase in angular velocity of the electron current.

Mills's analysis is way more advanced than the quantum model, and he was able to account for all the states found in experiment. The results are stunning; this experiment is one of the definitive tests of Mills's new theory and its superiority to quantum mechanics.

Since Mills's publication, later studies have confirmed that there are too many species to count moving through the superfluid, each at their own rate. They form a continuous background. This is consistent with Mills's prediction of hundreds, even thousands of electron bubble excited states as a function of the three quantum numbers.

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How to Relax an Atom

Let's move on to our *second* model experiment that demonstrates the failure of quantum mechanics with even more fireworks. I will explain the experiment and then go back and explain the theory behind it.

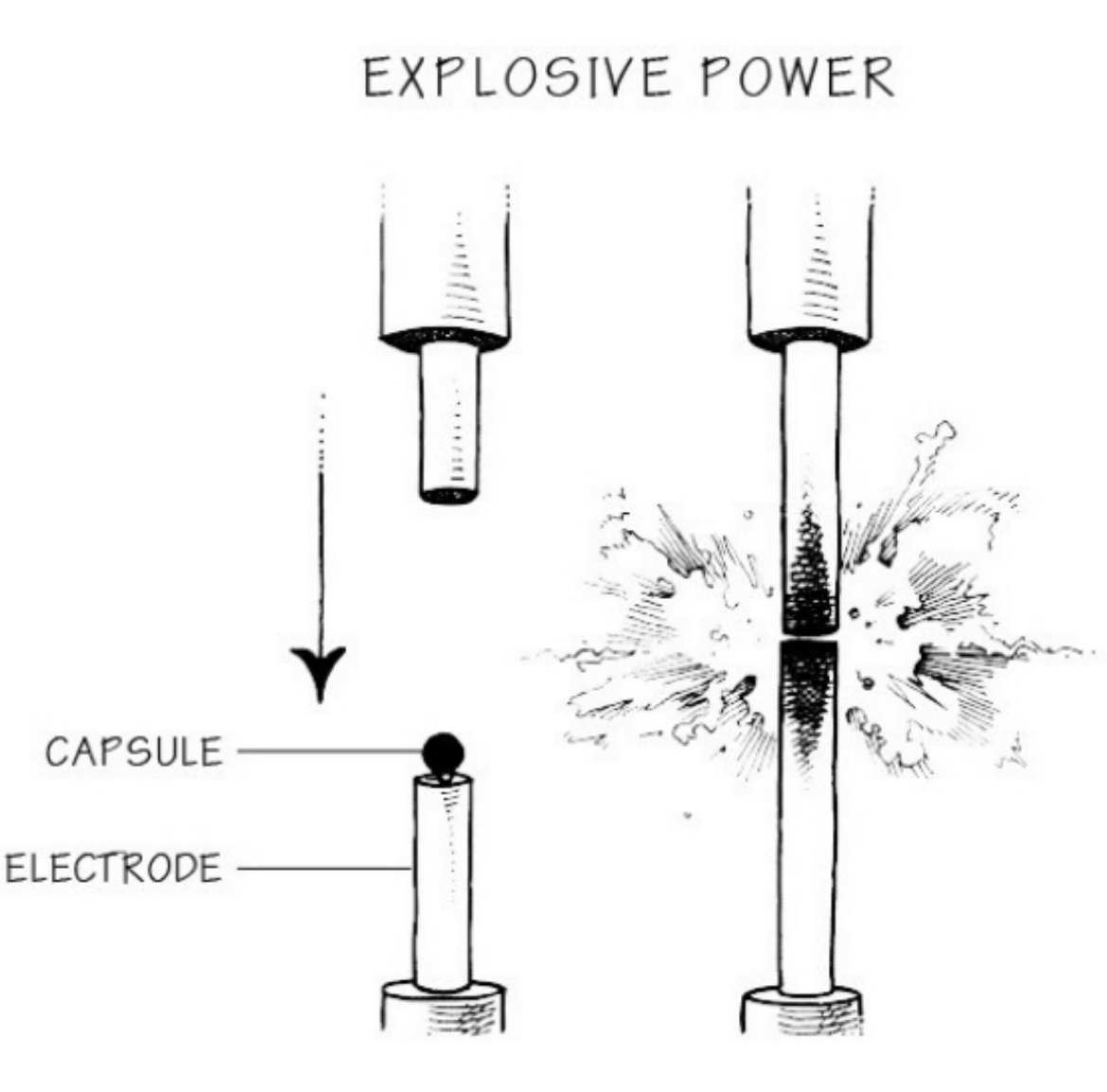
Heat up some pure silver until it is molten, and let a droplet fall into some distilled water at room temperature. Pluck out the hardened pellet and shake it off. Next, place it between the copper electrodes of a 75kW spot welder. Flip a switch that delivers a very short burst of power. In this experiment, the current delivers 15 volts with a peak amperage of 25kA over 12 milliseconds. The total power delivered to the pellet should be just enough to melt the silver.

What happens? The pellet *explodes*.

Specifically, it releases a supersonic expanding plasma, and a bright burst of extreme ultraviolet light.

To analyze this explosion, it was performed in a vacuum chamber with two spectrometers to detect light emissions in different wavelength regions. One handled ultraviolet and visible another the extreme ultraviolet. The spectra is all calibrated and stitched together, which is a lot harder than it sounds. In addition, the shock wave was recorded by video at 18,000 frames per second. Other versions of the experiment were performed in a bomb calorimeter to independently measure the power produced.

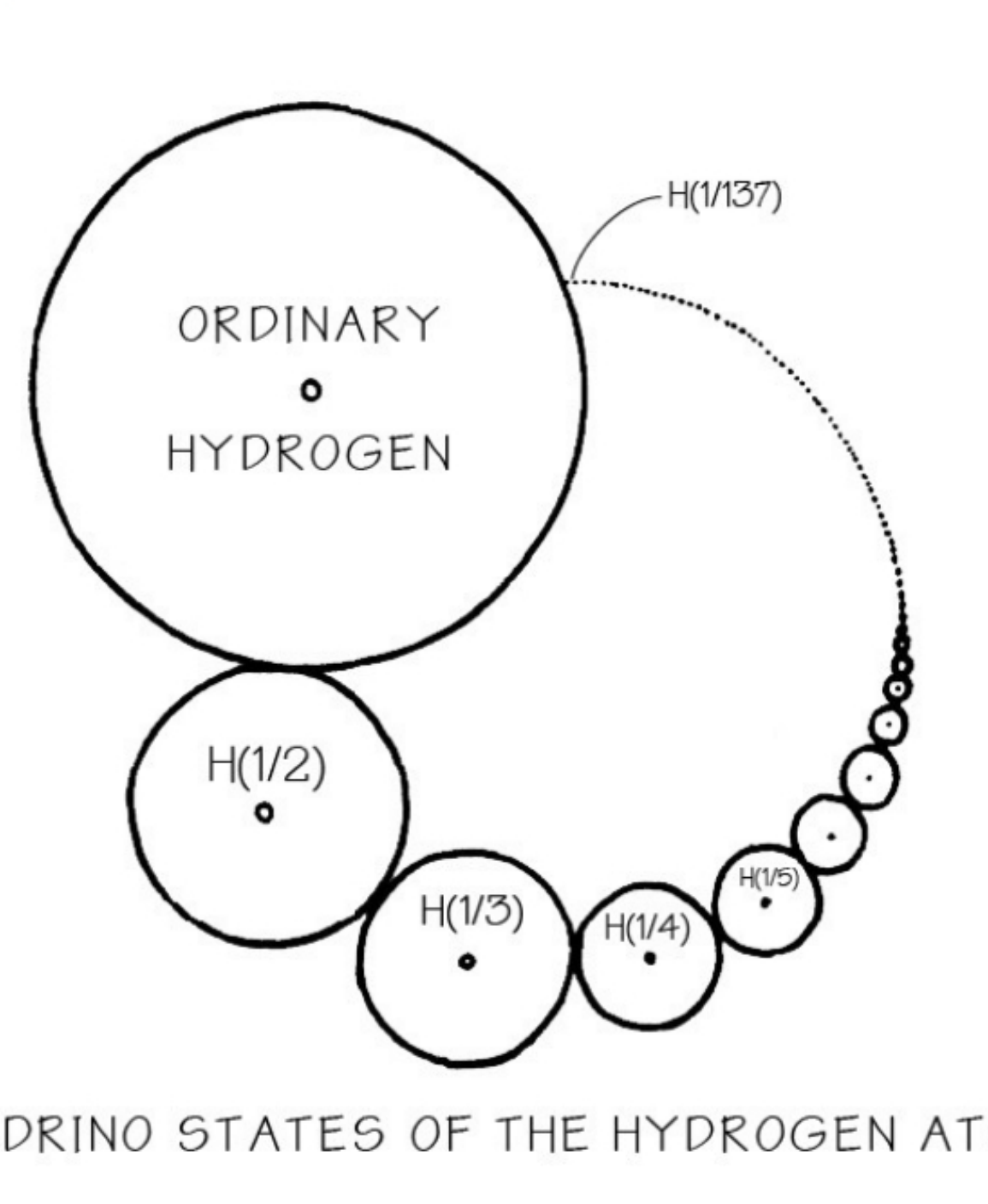
What the experiment finds is an extraordinary amount of very high energy light, and a significant power gain, measured both optically and through calorimetry. In one study, a pellet with a volume of 10 microliters produced an excess power of 400kW for a fraction of a second.



Only, there is nothing in the pellet to react. Just silver, and trapped water molecules that are impregnated in the solidified pellet.

What is happening here?

By 1988, Mills had used his new classical model of the atom to calculate the excited state orbits of the hydrogen atom. But Mills also unexpectedly found that it should be possible to relax a hydrogen atom into a stable orbit *below* the ground state. Although the physics is different than electron bubbles, the hydrogen atom can form fractional atomic orbits that are 1/2, 1/3, 1/4… etc the radius of the ground state orbit. Mills called these smaller atoms, *hydrinos*.



HYDRINO STATES OF THE HYDROGEN ATOM

It was a major prediction born of a new theory of nature, and the possibilities for new materials, new technology, and new chemical energy from hydrogen was too much to resist.

Mills started a commercial laboratory and spent the next thirty years studying hydrino chemistry, in tandem with his theoretical work. Now, after over a hundred papers published in scientific journals, Mills's team has compiled a ream of analytical evidence confirming the existence of the hydrino atom.

The chemistry of hydrino is unique. A hydrogen atom doesn't spontaneously radiate and fall to a hydrino state, because the ground state orbit is stable to radiation. Instead, it must be undergo a collision with another species that can accept energy through resonant coupling. The other species pulls some of the energy from the electron and releases that energy by ionizing electrons or breaking bonds. Only the right amount will do, making some atoms and molecules good catalysts.

After this resonant energy transfer, the hydrogen atom is in an unstable state, and it shrinks to form a hydrino. As it does so, it radiates high-energy light, in the EUV, which has never been observed from hydrogen before.

This whole process is *exothermic*, relaxing the electron closer to the proton and giving off about a hundred times more energy than a typical chemical reaction.

There are lots of catalysts. For instance, potassium, sodium, and helium atoms can be catalysts under the right conditions. A water molecule is a unique kind of catalyst; it contains hydrogen, but it also contains molecular bonds and an oxygen atom that can be ionized, and the right combination of these events creates the needed energy sink to create a one-fourth hydrino H(1/4) atom. It is like a molecular bomb. We just needed to find the trigger.

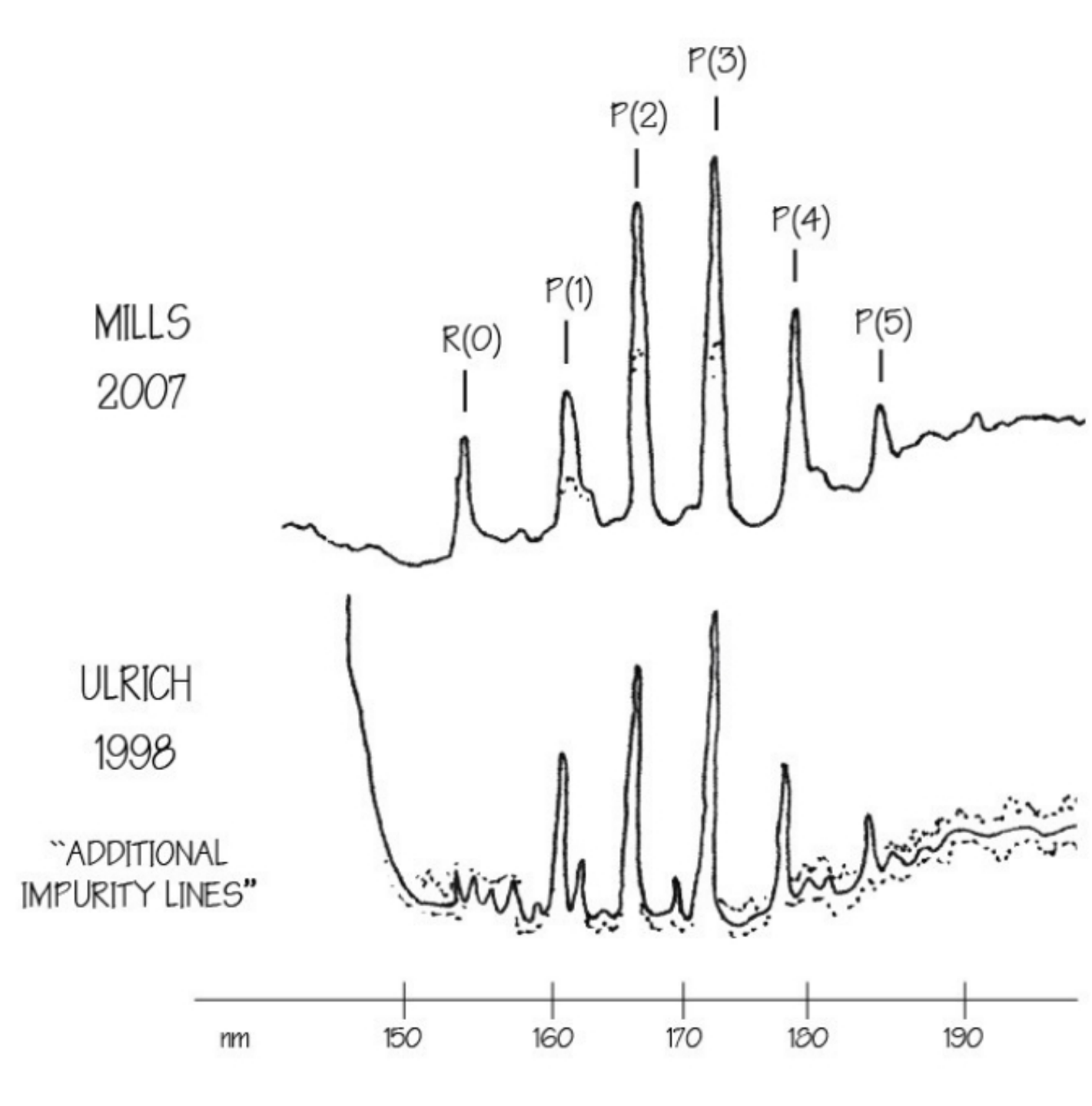
After thousands of experiments with other catalysts, Mills discovered the right trigger for the reaction with water. It needed a high current ignition in a conductive matrix to overcome the rate-limiting chemistry that had plagued decades of earlier attempts.

But none of this was predicted by quantum mechanics. Are we really, really sure that the hydrino atom exists?

Once formed, hydrino dimers (hydrino gas) can be analyzed chemically. We can tell how far apart the hydrogen atoms are by looking at the spectroscopic lines produced by their vibration and rotation. These rovibrational lines clearly demonstrate that the H2(1/4) hydrino molecule has one-fourth the interatomic distance of conventional hydrogen gas.

It really doesn't get any more clear than that.

These lines have been found by many different experiments, and have also appeared in serendipitous studies by outside researchers. Hydrino gas seems to be a naturally occurring impurity in some noble gasses.



UPPER: (EXPANDED) SPECTRUM OF AN ELECTRON BEAM MAINTAINED PLASMA OF ARGON WITH 1% HYDROGEN. MILLS ASSIGNS TO THE P BRANCH OF THE $H_2(1/4)$ MOLECULE FOR THE VIBRATIONAL TRANSITION: V = 1 TO V = 0. LINES MATCH MILLS' PREDICTION OF VIBRATIONAL TRANSITION OF 8.25 EV WITH A ROTATIONAL ENERGY SPACING OF 0.241 EV. AFTER (MILLS 2007).

LOWER: (EXPANDED) ELECTRON BEAM EXCITATION SPECTRUM OF THE THIRD CONTINUUM OF ARGON WITH STANDARD PURITY GAS, SHOWING WHAT THE AUTHORS DESCRIBE AS "ADDITIONAL IMPURITY LINES WHICH COULD NOT YET BE UNAMBIGUOUSLY ASSIGNED." AFTER (ULRICH 1998).

The analytical evidence is vast. Mills's team has identified hydrino hydride compounds by up-field shifted NMR peaks and through XPS; identified extreme ultraviolet emissions corresponding to hydrino transitions in hydrogen plasmas, which also match unidentified lines in the sun and interstellar space. They have created new compositions of alkali and alkaline earth hydrino hydrides and studied them with X-ray crystal diffraction.

Mills's team has experimented with thousands of plasma cells, exhibiting a wide variety of interesting behavior that has gotten some of the most respected plasma physicists in the world to stand up and get involved.

Hydrino gas is probably everywhere, if we know how to look. But we never knew to even look, and when a squiggly line appeared unexpectedly in the data, we never understood what it was.

Since 2014, Mills's team has been attempting to engineer a continuous reactor. The cells are impressive; when current is introduced, there can be a brilliant, blinding light emission as hydrino catalysis occurs.

While it is dangerous to overturn a paradigm of thought on one experiment alone, Mills's team has created a constellation of experimental data, often with contributions from outside laboratories and collaborators, verifying an important new discovery that was predicted by an important new theory. And the technology that springs from this well has a serious chance of being the non-nuclear, carbon free energy solution that we are looking for.

Top highlight

I mean, this is how science is *supposed* to work.

And moreover, it is a human story of creativity and perseverance that rivals some of the greatest discoveries in history.

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Epitaph of a Theory

The idea of the hydrino atom is repulsive to quantum theoreticians, in a way that gets them foaming at the mouth.

At least one paper, however, has suggested that the mathematics of quantum mechanics may be able to accommodate fractional orbits. If they manage to do so, I imagine it will be something like accommodating evolution within a creationist view of natural history. I really don't care about quantum mechanics anymore, and you shouldn't either.

Sean Carroll describes quantum mechanics as an "incredibly successful theory" but the frequency with which we hear this refrain does not make it more true.

It is in fact a hot mess defined by constant failure and revision in the face of new experimental data.

The theory has never been compatible with special or general relativity; it didn't predict electron spin, and it failed to predict a host of subtle changes in electron energy levels such as the Lamb Shift, Fine Structure, and Hyperfine Structure. Yes it can calculate the excited state energies for hydrogen, but not for helium or anything that comes after.

Now, we have two key experiments that demonstrate that quantum mechanics fails to account for the behavior of the electron.

I think its time to burst the quantum bubble.

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Brett Holverstott is author of the book Randell Mills and the Search for Hydrino Energy. This is the fourth in a series of articles on Medium that adapt content from the book. Thanks to Matt Schmidt for the illustrations.

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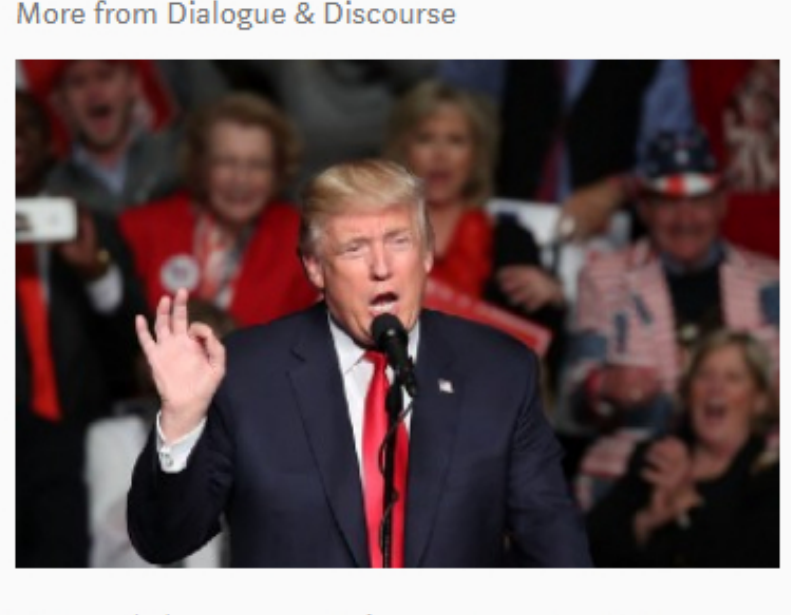

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